National Aeronautics and Space Administration

# OFFICE OF INSPECTOR GENERAL

# Annual Plan

## Fiscal Year 2000

## Introduction

The Office of Inspector General (OIG) Annual Plan for Fiscal Year (FY) 2000 combines the planned work of the Offices of Audits; Investigations; and Inspections, Administrative Investigations, and Assessments. These three program offices will focus on issues that serve the needs of NASA, Congress, and the public.

Our planning and resources are directed to the major NASA programs and activities, particularly those areas we believe present the greatest challenges to Agency management. The NASA Administrator established safety as the Agency's number one priority. We will support that priority by performing a number of audits and reviews on safety-related issues. Information technology (IT) is a key tool of a scientific and technological organization. The Agency's ability to remain free from unauthorized access of its network becomes more critical as the Agency becomes ever more reliant on cyber-communications. We will focus our work to help assure the security and integrity of NASA's computer and communications systems. We will also continue our focus on procurement and technology transfer.

This workplan provides the programs and issues which we plan to review during FY 2000. We consider these areas to be both relevant and important to the Agency's implementation of its strategic plan. This planning process is a flexible and evolving effort that we will update periodically to address emerging issues and problems, and to be responsive to the requests and concerns of Congress, NASA, and others. The most current workplan will be available through the OIG Internet homepage at http://www.hq.nasa.gov/office/oig/hq/

We welcome your suggestions for improving this document or for additional areas and issues to review. You may contact my staff or me directly at the telephone numbers listed in the chart, Points of Contact, on page 5. You may also leave the information on the OIG Hotline at 1-800-424-9183 or TDD 1-800-535-8134.

Roberta L. Gross
Inspector General

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About the cover:
Space Shuttle Columbia sits on Launch Pad 39B in preparation for the lauch of STS-93, the first Shuttle mission commanded by a female astronaut. The STS-93 payload, the Chandra X-ray Observatory, the world's most powerful x-ray telescope, was successfully deployed by the Columbia crew on July 24, 1999.

## ACRONYMS

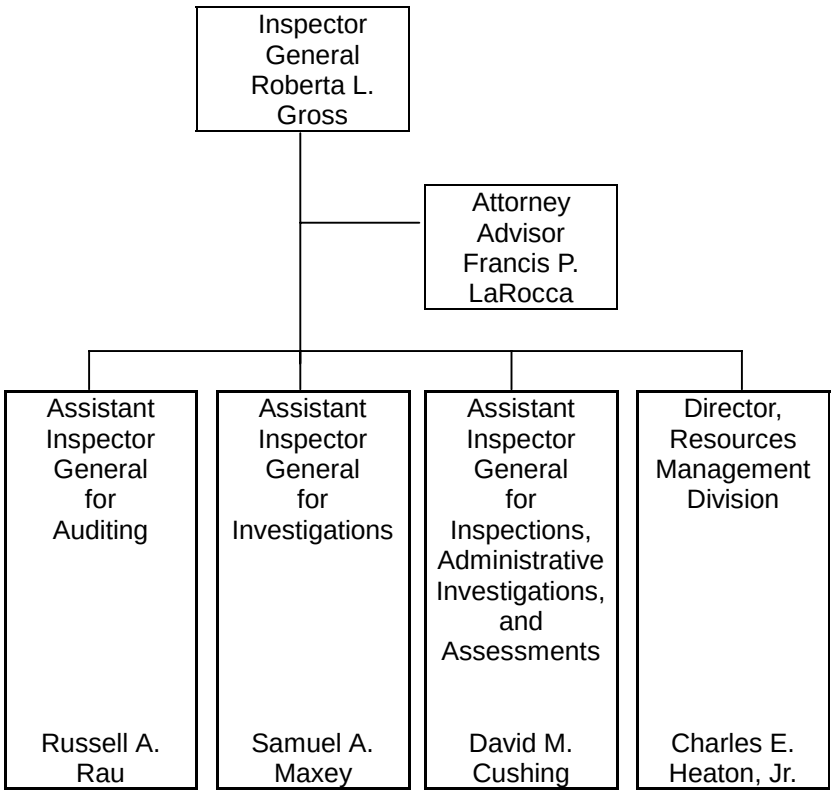
| | |
|---|---|
| AATT | Advanced Air Transportation Technologies |
| AIGA | Assistant Inspector General for Auditing |
| AIGI | Assistant Inspector General for Investigations |
| AIGIAIA | Assistant Inspector General for Inspections, Administrative Investigations, and Assessments |
| AIS | Automated Information Security |
| ARC | Ames Research Center |
| ASAP | Aerospace Safety Advisory Panel |
| ASI | Agency Safety Initiative |
| BCCP | Business Continuity and Contingency Plan |
| CCD | Commuter Crimes Division |
| CIO | Chief Information Officer |
| CO | Contracting Officer |
| COMSEC | Communications Security |
| CoSMO | Consolidated Supercomputing Management Office |
| COTS | Commercial-Of-The Shelf |
| CPA | Certified Public Accountant |
| CRV | Crew Return Vehicle |
| CSOC | Consolidated Space Operations Contract |
| CSPRO | Commercial Remote Sensing Office |
| DCMC | Defense Contract Management Command |
| DSN | Deep Space Network |
| ECS | Earth Observing System Data and Information System Core System |
| ELV | Expendable Launch Vehicle |
| EOS | Earth Observing System |
| EOSDIS | Earth Observing System Data and Information System |
| EVMS | Earned Value Management System |
| FAA | Federal Aviation Administration |
| FAR | Federal Acquisition Regulation |
| FMFIA | Federal Manager's Financial Integrity Act |
| FTS | Flight Termination Systems |
| FY | Fiscal Year |
| GAO | Government Accounting Office |
| GFE | Government Furnished Equipment |
| GSA | General Services Administration |
| GSFC | Goddard Space Flight Center |
| IAIA | Inspections, Administrative Investigations and Assessments |
| IBS | Institutional Business Systems |
| IFMP | Integrated Financial Management Project |
| IPA | Independent Public Accountant |
| ISS | International Space Station |
| IT | Information Technology |

| | |
|---|---|
| ITS | Information Technology Security |
| JPL | Jet Propulsion Laboratory |
| JSC | Johnson Space Center |
| LeRC | Lewis Research Center (former designation for John H. Glenn Research Center at Lewis Field) |
| NAS | Numerical Aerospace Simulation |
| NASA | National Aeronautics and Space Administration |
| NASIRC | NASA Automated Systems Incident Response Capability |
| NEPA | National Environmental Policy Act |
| NPG | NASA Policy Guidance |
| NSRS | NASA Safety Reporting System |
| OCI | Office of Criminal Investigations |
| ODC's | Ozone Depleting Chemicals |
| OIG | Office of Inspector General |
| OMB | Office of Management and Budget |
| OMDP | Orbiter Maintenance Down Periods |
| OSHA | Occupational Safety and Health Administration |
| PDD | Presidential Decision Directive |
| PKI | Public Key Infrastructure |
| QRAS | Quantitative Risk Assessment System |
| RCRA | Resource Conservation and Recovery Act |
| RLV | Reusable Launch Vehicle |
| SELVS | Small Expendable Launch Vehicle Services |
| SFOC | Space Flight Operations Contract |
| SIRTF | Space Infrared Telescope Facility |
| SSPF | Shuttle Software Production Facility |
| SSFL | Santa Susana Field Laboratory |
| TDRSS | Tracking and Data Relay Satellite System |
| U.S. | United States |
| UPS | Uniterrubtible Power Supply |

## Section I — Organization and Operation

The NASA OIG is a diverse multidiscipline workforce located at Headquarters and in field offices at all NASA Centers. During FY 1999, the OIG had an authorized budget of $20.0 million and a total staff of approximately 199. The current organizational structure focuses resources on those areas representing the Agency's highest vulnerabilities, especially procurement, information technology, telecommunications activities, and export and sensitive technology controls and processes.

### OIG Organization




### OIG Authority

The Inspector General Act of 1978, as amended, grants the OIG the administrative authority to:

- Receive full access to all records and materials available to the Agency.
- Determine which audits, investigations, inspections, and reviews are necessary and issue appropriate reports.
- Issue subpoenas for non-federal records.
- Report directly to the head of the Agency.

- Receive employee and other complaints, protect sources, and when necessary, refer matters to the United States Attorney General.
- Hire employees, experts, and consultants and procure necessary equipment and services.
- Obtain assistance from other agencies, including Federal, State, and local governments.

## Office of Audits

We provide a broad range of professional audit services with emphasis on performance and information systems audits. Additionally, we oversee the work of outside auditors performing activities for NASA. The audit program is carried out by a staff of professional auditors who hold various professional certifications, including Certified Public Accountants (CPA's). To effectively focus its resources, the Office of Audits correlates its work with NASA's major programs and activities.

The audit program's primary purpose is to review Agency and contractor programs and operations to determine whether:

1. Financial and other information is reliable.
2. Internal controls are adequate and resources are safeguarded.
3. Appropriated funds are properly expended.
4. Operations are efficient and economical.
5. The intended results of programs and activities are achieved.

OIG audits are performed in accordance with government and professional standards, which usually result in written reports that summarize the work performed and recommend actions to correct significant problems. These reports are addressed to the Agency official(s) responsible for the subject matter. Copies of these reports are also distributed to other interested parties. The public may obtain copies by faxing a request to the Assistant Inspector General for Auditing (AIGA) at (202) 358-3022, or by accessing the OIG Internet homepage at http://www.hq.nasa.gov/office/oig/hq/audits.html

## Office of Criminal Investigations

The primary mission of the Office of Criminal Investigations (OCI) is to conduct criminal and civil investigations of reported or suspected fraudulent or criminal acts by contractors, employees, and others that impact NASA programs and operations. The OCI special agents work closely with other federal law enforcement agencies and federal prosecutors to detect, prosecute, and prevent these acts. Other OIG investigations concern matters affecting the integrity of NASA programs and personnel, such as corruption and environmental malfeasance. Although much investigative emphasis is placed on major procurement fraud, we have substantially increased our involvement in the detection and prevention of computer-related crimes.

Our Computer Crimes Division (CCD) responds to attacks against NASA's vast telephony, Internet, and space systems networks. Reactive response to cyber attacks requires that CCD work closely with Agency officials as well as with other law enforcement organizations. In addition to its investigative activities, CCD conducts outreach activities regarding the commission of cyber attacks.

Inquiries regarding investigative reports must be submitted under the Freedom of Information Act. Such inquiries must be submitted in writing and either mailed to the Assistant Inspector General for Investigations (AIGI) or faxed to (202) 358-2767. Further information about the investigations program can be found by accessing the OIG Internet homepage at http://www.hq.nasa.gov/office/oig/hq/investigations.html.

### Office of Inspections, Administrative Investigations, and Assessments

The primary purpose of the Office of Inspections, Administrative Investigations, and Assessments (IAIA) is to perform evaluations of Agency and contractor activities that require rapid response and reporting back to the Agency. The unit also conducts administrative investigations of non-criminal matters. Feedback on results of IAIA work usually includes written reports to Agency officials with recommended corrective measures, potential administrative actions, or other possible remedies, as appropriate. Formal reports or other IAIA work products also identify issues appropriate for expanded OIG audits or investigations. Interested parties may obtain copies of IAIA reports by contacting the Assistant Inspector General for Inspections, Administrative Investigations, (AIGIAIA) by faxing a request to (202) 358-3022, or by accessing the OIG Internet homepage at http://www.hq.nasa.gov/office/oig/hq/inspections/inspections.html

### Agency Relationship with the OIG

NASA employees, as well as contractor and grantee employees, have certain responsibilities regarding the OIG. They should fully cooperate with OIG employees who are conducting official business and promptly notify the OIG of any suspected or actual criminal activity, fraud, mismanagement, and other wasteful or abusive practices or acts. Agency officials and supervisors should also be knowledgeable of their internal control responsibilities, and work to increase staff awareness of internal controls and OIG activities. Provisions of the "Whistleblower Act" and related statutes, as well as the OIG's authority to protect the confidentiality of sources under specific conditions, provide reasonable protections to those who report violations or problems.

Anonymous complaints are received telephonically through the 24-hour OIG Hotline at 1-800-424-9183 (TDD, 1-800-535-8134). The OIG also receives written complaints at the following address: NASA Office of Inspector General, P.O. Box 23089, L'Enfant Plaza Station, Washington, DC 20026. Complaints may also be faxed to (202) 358-2767. Our Cyber Hotline on the World Wide Web is http://www.hq.nasa.gov/office/oig/hq/hotline.html

## Points of Contact

The OIG values the comments and recommendations of our stakeholders, customers, partners, employees, and the contractor community. Should you have questions about the OIG and its mission, or you want further information regarding this Workplan, you may contact the following individuals: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| | Roberta L. Gross, Inspector General<br>NASA Office of Inspector General<br>300 E Street, SW<br>Washington, DC 20546-0001<br>*Tel*: 202-358-1220 |
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| Office of Inspections, Administrative Investigations, and Assessments | David M. Cushing, Assistant Inspector General for Inspections, Administrative Investigations, and Assessments<br>NASA Headquarters<br>*Tel*: 202-358-2572 *e-mail*: David.Cushing@hq.nasa.gov |

## Section II— Description of the Workplan

Under the authority of the Inspector General Act, OIG's mission is to conduct and supervise independent audits, investigations, inspections, and other reviews to promote economy, efficiency, and effectiveness and prevent and detect fraud, waste, and mismanagement. To fulfill that mission and help NASA achieve its scientific and technology goals we have aligned our programs to focus on those areas representing the Agency's highest vulnerabilities. We have identified those areas as NASA's top ten management challenges, to include:

1. Safety and Mission Assurance
2. Procurement
3. International Space Station
4. Information Technology
5. Fiscal Management
6. Program and Project Management
7. Launch Vehicles
8. Research and Technology Demonstration/Application
9. International Agreements
10. Environmental Management

The NASA OIG has a positive role in helping the Agency meet its goals. We believe our planned projects for the FY 2000 Annual Plan address NASA's top ten challenges and will assist NASA's missions in the new millennium. In addition, our review of the Agency's implementation of Government Performance and Results Act (GPRA) requirements cuts across all challenge areas. The GPRA work will assess the metrics NASA developed to measure the success of its programs and how well the Agency is measuring its performance.

NASA's dynamic environment, reduced budgets, leading technology, and commercialization of the aerospace industry, are some of the factors that require us to respond rapidly to new issues. Therefore, this workplan is a flexible, evolving document. Due to emerging priorities and issues, some planned assignments may be delayed while new reviews not listed may be initiated. Current information on our planning and details related to specific workplan project objectives are provided to our customers and will be updated as needed on the NASA OIG homepage. http://www.hq.nasa.gov/office/oig/hq

## Section III — Summary of Planned Projects Fiscal Year 2000

### 1. Safety and Mission Assurance

**Background** The NASA Administrator has stated that the Agency's number one core value is safety. NASA has begun an Agency Safety Initiative (ASI) with a goal of making the Agency the nation's leader in the safety and occupational health of its workforce and the safety of the products and services it provides. The ASI's four Core Process Requirements are to promote and ensure safety for (1) the public, (2) astronauts and pilots, (3) employees on the ground, and (4) high-value equipment and property. Space exploration involves risk, including the risk of failure. Without risk, there can be little discovery, and discovery is NASA's principle mission. To maximize the likelihood of success, NASA must become an informed risk taker by identifying, understanding, and managing risk as part of all activities.

The Aerospace Safety Advisory Panel (ASAP) also continuously reviews NASA's safety processes and procedures. In their 1998 Annual Report, the ASAP made recommendations to NASA to help improve safety. The ASAP report highlighted concerns with the potential effects on safety of workforce reductions and the continued transition of Space Shuttle functions to the Space Flight Operations Contract. Overall, the ASAP concluded that although safety is well served for the present, the picture is not as clear for the future. The ASAP particularly expressed concern with NASA's aging workforce and the Agency's inability to adequately plan for its succession because of hiring constraints. The report also states that the Space Shuttle and International Space Station (ISS) have also been limited in their ability to plan for the future. For example, the ASAP expressed concern that beneficial and mandatory safety and operational upgrades for the Space Shuttle are being delayed because of a lack of funding.

**Future Challenges** Keys to ensuring safety in future NASA operations include:

- Assuring appropriate level of training for staff who conduct safety reviews and evaluations.
- Maintaining adequate safety reporting systems.
- Ensuring Agency and contractor compliance with safety standards and regulations.
- Ensuring product safety and reliability.
- Developing appropriate safety planning mechanisms, including NASA's self-assessment of plans to safeguard the Agency's cyber infrastructure assets consistent with the requirements of Presidential Decision Directive 63 (PDD-63).
- Ensuring the ISS maintains crew safety.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 1A. Prior work is listed in Table 1B.

**Table 1A – Safety and Mission Assurance Planned Work**

| *Program Area* | *Project* | *Focus* |
|---|---|---|
| Audits | X-38/Crew Return Vehicle (CRV) (Carryover) A9904400 | Evaluating the X-38/CRV project management to ensure that the project will result in a safer better way to return crewmembers from the ISS. |
| Audits | NASA Safety Program Management (Carryover) A9900301 | Evaluating the adequacy of NASA's safety program reviews. Formal evaluations by NASA of its safety program are required annually. |
| Audits | NASA Safety Reporting System (NSRS) | Determining whether NSRS is an effective tool for surfacing and resolving safety concerns. |
| Audits | Safety and Mission Success Planning/Risk Assessment | Evaluating NASA programs and projects compliance with risk and safety assessment requirements. |
| Audits | Flight Range Safety for NASA-Sponsored Tests (X-33,34) | Evaluating the adequacy of safety planning for flight tests conducted at non-NASA locations. In particular assessing, flight range safety issues associated with the X-33 and X-34 flight test programs. |
| Audits | Data Reliability of the Quantitative Risk Assessment System (QRAS) | Determining whether QRAS data is accurate and reliable and assessing how Space Shuttle managers use the data in making program decisions. |
| Audits | Safety Reviews of Selected NASA Contractors | Determining whether contractor safety programs are being adequately assessed, contracts contain appropriate safety clauses, and NASA ensures compliance with the clauses. |
| Audits | Effectiveness of Flight Readiness Review Process for the Space Shuttle | Evaluating the effectiveness of the Flight Readiness Review process for balancing safety requirements and streamlining, identifying anomalies for resolution, and resolving exceptions. |
| Audits | Aviation Safety Program | Determining whether overall program management is effectively coordinating with partner agencies and using metrics to determine accomplishments. |
| Audits | Aerospace Test Facilities | Determining whether NASA protects its national assets through a program that adequately maintains aerospace test facilities and ensures that facilities are reliable and free from significant safety problems. |

(Continued)

**Table 1A – Safety and Mission Assurance Planned Work** (continuation)

| *Program Area* | *Project* | *Focus* |
|---|---|---|
| Inspections | Follow-up Assessment on 1997 Inspection of the NASA Aerospace Safety Advisory Panel (Carryover) G-99-020 | Determining the status of corrective actions taken by NASA management in response to our prior ASAP report recommendations. |
| Inspections | NASA Badging Program and Physical Access (Carryover) Wallops Flight Facility G-99-014<br>Marshall Space Flight Center (MSFC) G-99-001 | Determining whether NASA Centers comply with federal and NASA badging and physical access control guidelines. (Additional locations may be reviewed during FY 2000) |
| Inspections | Mothballed/Abandoned NASA Facilities | Determining whether facilities are abandoned in accordance with NASA guidelines and property contained in abandoned facilities is properly discarded. |
| Inspections | NASA Medical Facilities | Determining the adequacy of internal controls to prevent excessive dispensing or loss of controlled substances. |
| Inspections | Safety Clearance Procedures | Determining whether an effective safety clearance procedure using a proper Occupational Safety and Health Administration (OSHA) lockout procedure has been established and administered. A determination will also be made as to whether personnel are properly trained in safety clearance procedures. |
| Inspections | Satellite Failures/Malfunctions | Determining whether NASA has identified systemic reasons for recent satellite failures and malfunctions and taken appropriate corrective actions to decrease the risk of future occurrences. |
| Inspections | Health Reports by Flight Crews (ISS and Shuttle) | Determining whether appropriate reporting mechanisms are in place for adequate communication between flight crews, principal investigators performing experiments, and medical officers monitoring crews to ensure: a) accurate science and b) crew safety and health. |
| Inspections | Construction Inspections | Determining whether inspections are conducted and documented and how problems identified during the inspections are resolved. |

**Table 1B – Safety and Mission Assurance Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Safety Considerations at Goddard Space Flight Center (GSFC) (IG-99-047) | GSFC was making plans to implement the requirements of the ASI and to achieve certification under the OSHA Voluntary Protection Program. However, GSFC's various safety offices were not combined into one organization with a full-time director; mishap reporting process did not ensure that the causes of all mishaps were properly addressed and that all mishaps and related information was adequately reported; and contractor safety records were not evaluated prior to contract award, as required by the NASA Safety Manual. We made five recommendations for improvement. GSFC management concurred with each recommendation and has planned or initiated responsive actions. |
| Audits | X-38/Crew Return Vehicle Operational Testing (IG-99-036) | The United States has agreed to provide a CRV for the ISS. NASA's planned human-rating process for the CRV did not include an operational test. We recommended that management revise the Project Plan to provide for the contingency of CRV operational testing and include CRV operational testing in the Space Station Program Risk Management System as a primary risk. Management concurred and initiated responsive corrective actions. |
| Audits | Space Station Configuration Management (IG-98-032) | Functional and configuration audit processes for the Space Station program were effective in meeting program needs. |
| Audits | Space Station Spares Availability (M-IG-98-002) | NASA management agreed to continue monitoring spares availability and to take actions needed to provide support for development and utilization of the Space Station. |
| Audits | Space Station Quality Assurance (A-HA-97-058) | We found no significant systemic weaknesses during our survey work at Space Station prime contractor facilities in Huntsville, Alabama. |

(Continued)

**Table 1B – Safety and Mission Assurance Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Russian Participation in the International Space Station (A-HA-97-057) | NASA controls of Russian deliverables and payments appear adequate. While planned Russian contributions may not meet NASA's revised Space Station schedule, Russian funding problems are widely known. |
| Audits | Major Shuttle Hardware and Software Procurements (A-HA-97-033) | NASA is implementing Shuttle upgrades that improve safety, support the program manifest, improve mission supportability, and reduce costs. Also, the program budgeted sufficient funds for Phase I and II upgrades. However, NASA cannot implement major Phase III and IV upgrades unless Congress approves additional funding or the transfer of funds from other NASA programs. |
| Inspections | Assessment of Flight Termination Systems (FTS) (G-98-011) (Security Classified – Confidential) | To reach flight termination decisions, NASA uses various systems commonly referred to as FTS. In addition to other potential improvements, the Agency should use appropriate risk-based assessments to reach decisions on whether to use secure FTS. We made recommendations to enhance program security and address the Agency's top priority—safety. NASA management concurred with two report recommendations and recently agreed to reconsider concurrence with the remaining four recommendations. This report is classified with limited distribution; it is not generally releasable to the public. |
| Inspections | X-33 Program Security Assessment (G-98-009) | Assessment of the security for the X-33 prototype reusable launch vehicle (RLV) revealed areas for improvement. |
| Inspections | Shuttle-Mir Rendezvous and Docking Missions and International Space Station Operational Task Forces (G-98-003) | Task Force should expand the breadth of expertise of its membership and include members free of potential conflicts or perceived biases because of overly close association with NASA. Perception of bias may discourage reporting of safety concerns to the Task Forces. |

(Continued)

**Table 1B – Safety and Mission Assurance Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Inspections | Timing of Independent Team Meetings and Communications for Shuttle-Mir and International Space Station Missions (G-98-002) | Fact gathering and recommendations to the Administrator on flight-related issues needed to occur earlier in the process to maximize usefulness. |
| Inspections | Letter to the Honorable James Sensenbrenner on NASA's Participation in the Russian Mir Space Program (August 29, 1997) | We reported Shuttle-Mir safety challenges including: fire, decompression, and loss of attitude control. Oversight into Mir operations was limited because of NASA's "guest" status rather than partner status. Also, Russia did not provide timely information and ground support communication was inadequate. Safety impact of stress resulted from conditions aboard the Mir (high levels of potentially toxic substances, high temperatures, demands on time for maintenance activities, lack of communication). |
| Inspections | Modifications to NASA Safety Reporting System (Management Memorandum, G-98-018) | We recommended process changes and technical modifications to upgrade and modernize the NASA Safety Reporting System. |
| Inspections | Comments on the Lewis Spacecraft Mishap Investigation Board Report (Management Memorandum, G-98-020) | The Lewis Spacecraft Mishap Investigation Board report needed improvement. The process could be improved by avoiding Board membership for individuals with the appearance of bias or conflict of interest, increasing range of expertise of Board, and expanding scope of interviews. |

## 2. Procurement

**Background** Procurement continues to be a significant support process for all of NASA's enterprises and its overall mission. NASA's procurement obligations accounted for over 87 percent of the Agency's total obligations in FY 1998, just as they have for the last 5 years. NASA procures over $12.5 billion in goods and services annually. In January 1999, the General Accounting Office (GAO) identified NASA contract management as a major management challenge and program risk. The GAO stated, in part, that NASA lacks adequate systems and processes to oversee procurement activities and to produce accurate and reliable management information in a timely manner. NASA's procurement workload, combined with the significant reductions in procurement personnel, continues to challenge the remaining staff's ability to adequately administer contracts and implement new procurement initiatives.

As NASA places more reliance on contractors to administer programs, we continue to find problems in a variety of areas, such as leasing, noncompetitive procurements, subcontract management, and use of contractors for on-site support. NASA also faces risks as the Agency moves toward the greater use of electronic commerce. During FY 1998, NASA made over 113,600 purchases, totaling $66 million, with credit cards. In addition, NASA faces many challenges as it outsources various functions particularly IT functions. While strategic processes and core oversight activities must remain in-house, other functions can be outsourced. Activities that may be outsourced include expert IT advice, specific applications, education, maintenance, aspects of software/physical security and disaster recovery. Advantages of outsourcing include potentially lower costs and faster access to new technology. Outsourcing brings with it considerable risks unless the Agency carefully provides for establishing internal controls.

**Future Challenges** Keys to effective procurement at NASA include:

- Ensuring proper level of staffing in the current down-sizing environment to perform contracting requirements.
- Providing sufficient controls over and monitoring of both prime and subcontractors.
- Implementing or increasing the use of innovative procurement procedures such as earned value management and performance incentive fees.
- Ensuring costs billed to NASA cost-type contracts due to the changing industry environment are reasonable and allowable.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 2A. Prior work is listed in Table 2B.

**Table 2A - Procurement Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Health Care Costs at Major NASA Contractors (Carryover) A9907000 | Evaluating the reasonableness of health insurance costs at selected major NASA contractors. |
| Audits | Raytheon Subcontract Management (Carryover) A9905800 | Evaluating NASA and Raytheon's management and approval of sole-source subcontracting. |
| Audits | Contractor Travel Costs (Carryover) A9905600 | Assessing contractor travel costs to determine whether reducing travel costs would affect performance effectiveness. |
| Audits | NASA's Use of Electronic Commerce (Carryover) A9905000 | Evaluating the status and effectiveness of NASA's use of electronic commerce to streamline procurement. |
| Audits | NASA Contract Audit Follow-up System at Johnson Space Center (JSC) (Carryover) A9904500 | Assessing the Center's compliance with Office of Management and Budget (OMB) Circular A-5 in performing timely followup, resolution, and disposition of audit report recommendations; and asses the Center's compliance with requirements to track audit reports, report on unresolved recommendations, and evaluate the follow-up system. |
| Audits | NASA Contract Audit Follow-up System at Marshall Space Flight Center (Carryover) A9901800 | Assessing the Center's compliance with OMB Circular A-50 in performing timely followup, resolution, and disposition of audit report recommendations; and asses the Center's compliance with requirements to track audit reports, report on unresolved recommendations, and evaluate the follow-up system. |
| Audits | Procurement Module Testing of NASA's Integrated Financial Management Program (IFMP) (Carryover) A9901700 | Evaluating the adequacy of NASA's testing of the IFMP procurement module |
| Audits | Contractor's Use of Consultant Services | Assessing NASA's increasing use of professional, administrative, and management support consultant services. |

(Continued)

**Table 2A - Procurement Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Contractor Quality Systems | Determining whether Defense Contract Management Command (DCMC) is effectively performing delegated quality assurance activities on major NASA contracts. |
| Audits | Subcontract Management by Major NASA Contractors | Evaluating subcontract management by NASA's major contractors with an emphasis on internal controls, competitiveness of awards, and NASA surveillance. |
| Audits | Health Care Costs at NASA Contractors | Evaluating the effectiveness of DCAA oversight and NASA insight concerning health insurance costs at major NASA contractors. |
| Audits | NASA Administration of Grants and Agreements | Evaluating whether NASA appropriately uses grants and cooperative agreements and properly monitors grant and cooperative agreement requirements. |
| Audits | NASA Reliance on Corporate Self-governance Programs | Determining the extent and effectiveness of NASA's use of advanced agreements requiring contractors to use Earned Value Management Systems (EVMS). |
| Audits | NASA Contract Close-out Process | Evaluating NASA's efforts to timely closeout inactive contracts and reduce unliquidated obligations. |
| Audits | NASA Contract Audit Follow-up Systems | Determining whether policies and procedures for resolving audit findings comply with OMB Circular A-50 and whether follow-up activities ensure the prompt and effective resolution of audit recommendations. |
| Audits | Contractor Merger and Acquisition Costs Charged to NASA Contracts | Assessing merger and acquisition costs on NASA cost-type contracts to determine whether only allowable restructuring costs were charged to NASA and the Agency achieved overall savings. |
| Audits | Contractor Performance on NASA Support Services Contracts | Evaluating the adequacy of NASA oversight of support service contractor performance and the contractors management controls to ensure effective performance by contractor employees. |

(Continued)

**Table 2A - Procurement Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Effectiveness of the NASA Smart Card Program | Determining whether NASA has implemented appropriate controls over the use of Smart Cards and whether increased use could result in savings. |
| Audits | Contractors' Use of Consultant Services | Determining whether NASA has adequate controls over contractors' use of consultant services. |
| Audits | NASA's Use of Just-in-Time Acquisitions | Determining whether NASA could benefit from expanding just-in-time acquisitions into additional procurement areas. |
| Audits | Multiple Award Task Order Contracts | Assessing whether NASA's use of multiple award task order contracts is consistent with statutory requirements and in the best interest of the Agency. |
| Audits | Consolidated Space Operations Contract (CSOC) | Determining whether the CSOC contract meets the strategic needs of NASA Enterprises by reducing operations costs, consolidating and integrating operations across NASA, and increasing standardization and interoperability. |
| Inspections | Use of Support Service Contractors at the John H. Glenn Research Center (Carryover) G-99-017 | Determining whether the use of support service contractors is appropriate and cost-effective and in accordance with law and regulation. |
| Inspections | Inspection of NASA Exchange Operations John H. Glenn Research Center (Carryover) G-99-016 | Determining whether the Exchanges are being managed in accordance with applicable regulations and guidelines. |
| Inspections | NASA Headquarters Computer Support Inspection (Carryover) G-99-009 | Determining the effectiveness of computer support provided to Headquarters by the support contractor. |
| Inspections | Assistance to Entertainment-Oriented Productions | Identifying evaluation criteria used in deciding to grant a request for assistance and whether assistance impacts other Agency operations. |

(Continued)

**Table 2A - Procurement Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Investigations | NASA Leases (Proactive Investigations) | Identifying improperly executed lease arrangements that caused or could cause NASA to incur unnecessary costs. |
| Investigations | Grants and Research Contracts (Proactive Investigations) | Identifying potentially fraudulent claims for work not performed. |
| Investigations | Contract and Subcontract Irregularities (Proactive Investigations) | Identifying irregularities which may be indicators of criminal activity in the area of cost mischarging, kickbacks, and bid-rigging. |
| Investigations | Non-Conforming and Substandard Parts and Materials (Proactive Investigations) | Determining the relationship between instances of parts failure or product defects and improper testing or non-testing by contractors, or providing parts that do not comply with contract specifications. |
| Investigations | Health Care Fraud (Proactive Investigations) | Identifying and developing fraud related issues in the health care arena. |

**Table 2B - Procurement Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | NASA Noncompetitive Procurements (IG-99-058) | Technical analysts did not always adequately support their conclusions about price reasonableness of noncompetitive procurements and contracting officers (CO's) did not always support the reasonableness of prices paid for noncompetitive purchase orders. NASA agreed to have the CO's (1) work closely with the technical analysts to ensure that the technical analyses are supportable and well documented, and (2) provide refresher training on the required price support for purchase order awards. |
| Audits | Allied-Signal Subcontract Management (IG-99-042) | Allied-Signal did not maintain supporting documentation for three out of the four justifications for noncompetitive procurements that we reviewed. As a result, NASA has reduced assurance that the contractor maximized the competition of its subcontracts. NASA agreed to direct Allied-Signal to maintain improve documentation of justifications for noncompetitive procurements and to request that the DCMC reviews supporting documentation in their next purchasing system reviews. |
| Audits | Commercial Use of the Santa Susana Field Laboratory (SSFL) (IG-98-038) | NASA did not receive approximately $3.1 million in rent from a contractor's commercial use of the SSFL, contrary to the Federal Acquisitions Regulation (FAR). NASA agreed to charge the contractor rent for its future use and evaluate recovery of rent for past commercial use. |
| Audits | NASA General-Purpose Vehicles Acquisition and Use (IG-98-035) | Four NASA Centers reviewed had excessive vehicles. Two Centers also continued to purchase vehicles, rather than lease vehicles through the General Services Administration (GSA). NASA initiated action to eliminate underutilized vehicles and convert to leasing where beneficial to NASA. |

(Continued)

**Table 2B - Procurement Prior Work (**continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Single-Source Suppliers for Critical Items (IG-98-030) | NASA has not adequately developed analyses of critical, single-source suppliers of industrial materials. Management completed some corrective action. One item remains open pending completion of language to the risk management section of NASA Policy Guidance (NPG) 7120.5A. |
| Audits | Jet Propulsion Laboratory (JPL) Contract Issues:<br>NASA Costs Paid to Rehired Former JPL Employees (IG-98-027)<br>Caltech Government Billings Transferred to the JPL (JP-97-012)<br>Early Retirement Option Plan at the JPL (JP-96-004)<br>Travel Policies, Procedures and Practices at the JPL (JP-95-005)<br>JPL Employee Charges at the Caltech Campus (JP-95-003) | A series of reviews found that NASA's federally-funded research and development contractor had adequate documented policies and procedures, but failed to follow them, resulting in increased costs to NASA. Such incidences have occurred in payments for travel, early retirement, billings, rehired former employees, and employee charges for materials purchased off the Laboratory. |
| Audits | Risks Associated with Ames Research Center (ARC) Acquisition of Military Family Housing (IG-98-022) | A cost-benefit study to support NASA's acquisition of housing units did not fully identify and consider all costs associated with the housing. In addition, all legal and environmental issues had not been resolved. NASA initiated actions to address the above issues and ultimately located a Department of Defense military organization to retain responsibility for the housing. |
| Audits | NASA's International Merchant Purchase Card Program (IG-98-011) | NASA's credit card program was generally effective; however, improvements in property accountability, split purchases, cards used by someone other than the cardholder, and purchase and payment controls were necessary. Management took corrective action. |

(Continued)

**Table 2B - Procurement Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Tracking and Data Relay Satellite System (TDRSS) Single Access System Reimbursable Rate (IG-98-008) | NASA is understating the TDRSS single access service reimbursable rate for services provided to other U.S. Government customers. NASA agreed to reexamine both rates and policies. |
| Audits | Contractor Leased Facilities at Marshall Space Flight Center (IG-99-053)<br>Contractor-Acquired Facilities at Johnson Space Center (IG-99-008)<br>Contractor Facility Leases (IG-98-002)<br>Contractor Facility Leases at Lewis Research Center (LeRC) (IG-97-009)<br>Contractor Facility Leases, Lockheed Credit Union Occupancy Costs (IG-97-037) | NASA's management of facility leasing can be improved. A significant number of contractor facilities were not effectively used and some contractor leases were not correctly classified as capital leases. Excessive lease costs existed on two specific leases at LeRC, and occupancy costs charges for a credit union at Kennedy Space Center (KSC) were questionable. NASA initiated actions on all issues identified. |
| Inspections | Contractor Use of General Services Administration Vehicles at the Goldstone Deep Space Communications Complex (G-98-013) | Based on alleged misuse of government vehicles at the facility, we inspected the use of GSA vehicles by contractors at the Goldstone Complex. NASA contractor employees used GSA vehicles for work-to-home commuting purposes. Such practice was contrary to NASA policy and federal regulations, but in accordance with collective bargaining agreements. NASA management concurred with our two recommendations to discontinue current practices until contractors submitted appropriate justifications to obtain required Administrator authorizations and to review similar practices of other contractors to ensure the appropriate use of GSA vehicles. A follow-up review is planned regarding implementation of planned corrective actions. |

(Continued)

**Table 2B - Procurement Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Inspections | Assessment of Property Disposal Outsourcing (G-98-008) | The excess property outsourcing pilot program at MSFC did not comply with Federal Property Management Regulations. NASA initiated actions to improve the program. |
| Inspections | Shuttle-Mir Rendezvous and Docking Missions and International Station Readiness Task Forces (G-98-003) | The effectiveness of external task forces related to Mir and the ISS could be improved. We recommended restructuring the process used by the task forces to obtain contract support. |
| Partnerships | NASA Single Process Initiative Block Change Process Implementation (P&A-98-002) | NASA must address inconsistent Center implementation, minimal cost savings, and inadequate resources for staffing and implementing the initiative. NASA is working to improve the benefits realized by NASA from the single process initiative. |
| Partnerships | NASA's Cooperative Agreements with Large Commercial Firms (P&A-97-001) | Cooperative agreements appear to have achieved NASA's goals; however, improvements can be made in resource sharing contributions, reporting requirements, and other administrative matters. |

## 3. International Space Station

**Background** The launch of the Zarya control module in November 1998 began the assembly phase of the ISS. The mission of the ISS is to enable long-term exploration of space. It will afford scientists, engineers, and entrepreneurs a platform on which to perform complex, long-duration, and replicable experiments in the unique environment of space.

OIG reviews have found significant concerns related to ISS cost, contingency planning, and the CRV. ISS contracts continue to experience significant cost growth, and the cost to operate the ISS after assembly is uncertain. In March 1999, Boeing, the prime contractor, announced that actual and projected cost overruns on the ISS prime contract had grown by $203 million, from $783 million to $986 million. This was the third major increase in reported overruns within 2 years, for a total increase of $708 million. In addition, cost overruns and schedule delays related to Russia's precarious political situation continue.

**Future Challenges** The keys to continued Space Station assembly and operation are:

- Managing the political, financial, technical, and safety challenges presented by an international partnership.
- Developing contingency plans to mitigate the impact of a partner's inability to meet delivery schedules.
- Overcoming technical challenges inherent in manufacturing, assembling, and testing complex hardware and software components provided by different nations and integrated in space.
- Safely maintaining, upgrading, and operating a structure as complicated as the Space Station.
- Maximizing the beneficial use of the Space Station for scientific research and technology development.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 3A. Prior work is listed in Table 3B.

**Table 3A - International Space Station Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Spare Parts Quality Assurance (Carryover) Assignment No.: A9900700 | Assessing the process by which NASA assures the quality of spare parts for the Space Station and Space Shuttle. |
| Audits | Performance Management of the Space Station Contract (Carryover) Assignment No.: A9904200 | Evaluating the performance management of the Space Station prime contract with The Boeing Company at the request of the NASA Administrator. |
| Audits | Spare Parts Costs (Carryover) Assignment No.: A9907300 | Evaluating the process for acquiring spare parts for the Space Station and Space Shuttle and assessing the prices of parts for fairness and reasonableness. |
| Audits | Technology Upgrades on the International Space Station | Determining whether the potential risks of using obsolete computer hardware and software on the Space Station are significant enough to require upgrading the ISS hardware and software before further assembly due to possible integration, performance, and safety problems in the future. |
| Audits | Management of Space Station Program Changes and Reserves | Determining whether NASA is effectively managing ISS Program changes and whether financial reserves are adequate to ensure the ISS is successfully developed and operated. |
| Audits | Acquisition of Space Station Propulsion Modules | Determining whether NASA has developed a cost-effective acquisition strategy for long-term propulsion capability for the ISS. |
| Audits | Government Furnished Equipment (GFE) for Space Station | Determining whether the ISS Program Office has assessed the cost-benefit of using GFE rather than contractor-furnished equipment and whether acceptance testing is adequate to ensure the GFE conforms to quality requirements. |
| Inspections | International Space Station Customer Support | Determining whether researchers are satisfied with the procedures for manifesting experiments on the ISS and whether researchers have an effective voice in developing policies and procedures related to research on the ISS. |

**Table 3B - International Space Station Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Space Station Contingency Planning for International Partners (IG-99-009) | The Space Station Program Office had not developed an integrated and comprehensive plan to address risks to the assembly of the Space Station because of possible delay or default by international partners. In addition, the contingency plan did not contain or clearly identify several critical elements for effective risk management. Specifically, the plan did not contain cost and schedule impacts and did not clearly identify risk mitigation measures and the primary consequences of the contingencies. We recommended management establish (1) procedures to ensure the contingency plan complies with Agency guidance for effective risk management, and (2) a process to ensure the contingency plan is kept current. Management concurred with the intent of both recommendations but planned corrective actions that were responsive to only the second recommendation. We requested that management reconsider its position. |
| Audits | Space Station Corrective Action Plan (IG-99-007) | The NASA Space Station contract requires the prime contractor Boeing, to have an EVMS which produces an assessment of cost and schedule performance. Boeing prepares a report, which identifies the largest cost and schedule variances, and the corresponding cause, effect, and the corrective action plans that will be taken. However, Boeing's corrective action plans and NASA's oversight of the plans need improvement. We recommended management (1) ensure surveillance of the EVMS, (2) require the DCMC to prepare required contract administration reports, and (3) improve the quality of corrective action plans. Management concurred with each of the recommendations. |

(Continued)

**Table 3B – International Space Station Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Space Station Change Order Process (IG-97-015) | The Space Station program had almost $400 million in undefinitized changes that were over 180 days old. We recommended that responsibility for timely definitization of contract changes be assigned to a program employee. Management has implemented corrective action. |
| Audits | Space Station Facilities Requirements (JS-96-006) | A Space Station contractor charged the program $2.9 million annually for idle capacity. We recommended the CO ensure future costs are reasonable. Management has take corrective action. |
| Audits | Space Station Prime Contractor Performance Management (JS-96-004) | $127 million of cost overruns were omitted from the contractor's completion estimate. Consequently, future funding requirements for the ISS were not adequately portrayed. We recommended the CO require the contractor to provide better analysis and reporting of cost data. Management concurred and implemented responsive actions. |
| Audits | Boeing Indirect Cost Allocations to Space Station Contract (JS-96-001) | NASA reimbursed a contractor for indirect costs on the Space Station contract that did not benefit NASA, potentially resulting in $33million in excess charges over the life of the contract. We recommended the CO ensure an equitable allocation of costs to the contract. Management has taken steps to reduce the allocation. |
| Inspections | Followup Assessment of Management Alert Issued February 6, 1998, Chartered Flights Between the United States and Russia (G-98-014) | In general, the charter service used by NASA to support the ISS program was not cost-effective compared to commercial air services. We also reported our concerns regarding security, procedures, and adherence to transportation regulations. NASA management concurred with our single recommendation to terminate the charter service. The termination will save the Agency approximately $4.0 million in annual costs. |

(Continued)

**Table 3B – International Space Station Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Inspections | Review of International Space Station Phase I Lessons Learned Activity (G-98-012) | Although the ISS program was late in initiating the lessons learned process, the transfer of knowledge and experience acquired was being adequately addressed. With partial concurrence on our third recommendation, management fully agreed with the two remaining to enhance the lessons learned process. NASA agreed to assess other sources of lessons learned, including various historical sources, and to apply them to the ISS program. |
| Inspections | Enhancing Compatibility for Long-Duration Space Flight Crews (G-98-005) | To improve safety and mission success of long-duration space flights, NASA needs to identify astronauts best suited for long-duration travel, provide psychological evaluations of astronauts, and improve training. Management partially concurred with our recommendations. |

## 4. Information Technology

**Background** The Clinger-Cohen Act of 1996 increased the responsibility, authority, and accountability of individual federal agencies for information technology management. It vested the Agency Chief Information Officer (CIO) with responsibilities for improving the management of and accountability for the Agency's IT program. NASA's missions and programs depend on properly managed information resources. Consequently, NASA is a significant investor in IT ($2.1 billion in Fiscal Year 1999). To streamline operations, NASA is further consolidating and outsourcing various IT operations, including local area networks and desktop computers, mid-range computing, administrative mainframe computer operations, and supercomputing.

Our activities continue to find a fragmented IT Security (ITS) program without clear lines of authority, inadequate policies and guidelines, and ineffective enforcement of existing policies and guidelines. We believe NASA's having separate organizations to handle classified and unclassified ITS causes confusion, inhibits the implementation of a workable ITS program, and leads to duplication of effort, when better solutions are available. Another example of the fragmentation is seen in the division of responsibilities for ITS among multiple Centers. This leads to serious coordination problems and lack of effective oversight.

We have briefed NASA on its serious network vulnerabilities. For the last 2 years, the OIG has recommended that NASA designate ITS as a high-risk area in the annual Federal Manager's Financial Integrity Act (FMFIA) Report. We based our recommendation on our concerns about the fragmentation of the ITS program, the lack of policies and guidance, network physical and system security weaknesses, the lack of properly trained personnel, and lack of threat analysis. The Agency is committed to implementing a wide range of improvements.

**Future Challenges** The keys to an effective Information Technology program include:

- Ensuring data security, integrity, and application controls.
- Protecting operations and communications with spacecraft.
- Monitoring and evaluating the streamlining of operations through outsourcing information technology operations for cost efficiencies, dependency on the vendor for technological direction, vulnerability of strategic information to outsiders, and dependency on the viability of the vendor.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 4A. Prior work is listed in Table 4B.

**Table 4A - Information Technology Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Software Quality Assurance (Carryover) A9906600 | Determining whether selected software development projects have complied with applicable software quality assurance standards and procedures. |
| Audits | Windows NT Security and Integrity Controls at Headquarters (Carryover) A9905700 | Evaluating whether Headquarters has implemented and configured selected NT servers to provide an appropriate level of logical security and interoperability for associated automated systems. |
| Audits | Implementation of Security Software at JSC's Shuttle Software Production Facility (SSPF) (Carryover) A9905300 | Evaluating whether JSC and the United Space Alliance have appropriately implemented and configured logical security software to protect SSPF systems. |
| Audits | General Controls at JSC's Mission Control Center (Carryover) A9904600 | Evaluating the adequacy of physical access, environmental protection, and disaster recovery planning for JSC's Mission Control Center. |
| Audits | UNIX Operating System Security at GSFC (Carryover) A9904000 | Determining whether GSFC has implemented and configured the UNIX operating system to provide an appropriate level of security and integrity. |
| Audits | UNIX Operating System Security at KSC (Carryover) A9903800 | Determining whether KSC and the United Space Alliance have implemented and configured the UNIX operating system to provide an appropriate level of security and integrity. |
| Audits | Implementation of the Clinger-Cohen Act (Carryover) A9903400 | Examining policies and procedures concerning the duties and responsibilities of the CIO relating to information resources management, information technology acquisition including the performance of IT programs, and maintenance of an IT architecture. |
| Audits | Presidential Decision Directive 63 | Evaluating whether NASA has developed and implemented a plan to protect the Agency's cyber assets consistent with the requirements of PDD-63. |

(Continued)

**Table 4A - Information Technology Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Certificate Management | Evaluating the adequacy and effectiveness of internal controls established for the Agency'' central Certification Authority located at ARC. |
| Audits | Information Technology Acquisitions | Determining whether NASA and its contractors are complying with applicable IT acquisition requirements. |
| Audits | Telecommunications Management | Evaluating whether NASA management controls are adequate regarding the use of telecommunication services, including voice, data, and video information technology. |
| Audits | Next Generation Internet | Determining whether the Next Generation Internet project objectives, milestones, and performance measures are being achieved. |
| Audits | Operating System Controls in Major NASA Information Systems | Determining whether the operating system environment has been configured and implemented to provide for an appropriate level of security and integrity. |
| Audits | Database Controls in Major NASA Information Systems | Determining whether database security and integrity controls have been adequately implemented in the major systems selected for audit. |
| Audits | Network Controls in Major NASA Information Systems | Determining whether controls in the network environment are adequate to protect against unauthorized access and transmission risks. |
| Audits | Systems Development – Checkout and Launch Control System | Evaluating control issues associated with: (1) project management, (2) systems requirements definitions, (3) security architecture and requirements, and (4) testing and implementation of application and system software. |
| Audits | Use of COTS Software in Ground Systems | Determining the cost, schedule, and operational impacts of using commercial-off-the-shelf (COTS) software in a ground system. |
| Inspections | Computer Banner Inspection (Carryover) G-99-015 | Determining whether the requirement that banners be put on NASA computers is being followed. |

(Continued)

**Table 4A - Information Technology Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Inspections | Consolidated Space Operations Contract Security (Carryover) G-99-012 | Determining whether CSOC has anticipated potential threats and risks and has solicited program expertise from appropriate ITS and communications security (COMSEC) experts. |
| Inspections | Status of Johnson Space Center Station Program Implementation of Communications Security and Automated Information Security (AIS) Measures (Carryover) G-99-010 | Determining whether NASA management has accurately identified COMSEC and AIS requirements necessary for mission assurance and safe Space Station operations. |
| Inspections | Hard Drive 99: Clearing Controlled Information from Excessed Micro-computers (Carryover) G-99-003 | Determining whether computers in the process of being excessed have been cleaned of all data and software. |
| Inspections | Information Technology Security Staff Qualifica-tions and Experience | Determining the minimum training, qualifica-tions, and experience necessary to perform ITS functions. |
| Inspections | NASA's Communications Security Program | Determining whether NASA's COMSEC program and its associated organizational structure are adequate to ensure compliance with nationally mandated COMSEC policy. |
| Inspections | The Jet Propulsion Laboratory's Implementation of NASA's Communications Security Policy | Evaluating JPL's compliance with NASA policy on the application of COMSEC to space systems. |

**Table 4B - Information Technology Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Year 2000 (Y-2K) Program Over-sight of NASA Grants and Cooperative Agreements (IG-99-048) | NASA requires its grant recipients and cooperative agreement partners to report significant Y2K-related problems. However, NASA has not established timeframes for such reporting. Also, the Agency does not require recipients to report on whether recipient computer systems are Y2K compliant. Management agreed to require major recipients to report whether recipient computer systems are Y2K compliant, identify significant Y2K-related problems, and require appropriate remedial actions. |
| Audits | Year 2000 Implementation Phase (IG-99-044) | The OMB adopted the GAO contingency planning guide entitled *Year 2000 Computing Crisis: Business Continuity and Contingency Planning* (BCCP), which identifies the key elements that a BCCP plan and a contingency test plan should contain. NASA installations had incorporated only some of the key elements prescribed by the GAO planning guide which reduces NASA's assurance that it can effectively respond to Y2K-related failures. Management agreed to correct the deficiencies. |
| Audits | Ames Research Center's NAS Facilities Disaster Recovery Plan (IG-99-032) | The Numerical Aerospace Simulation (NAS) Facility does not have a management-approved disaster recovery plan that meets applicable federal and NASA requirements for emergency response procedures, extended backup operations, and testing. NASA management agreed to implement and maintain a NAS disaster recovery plan that complies with Agency and federal regulations |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Audit of Year 2000 Program Compliance Requirements in NASA Information Technology-Related Contracts (IG-99-022) | NASA guidance required contracting officers to include a clause in IT solicitations and new contracts addressing Y2K and to modify the statement of work in existing IT operation and maintenance contracts. However, the JPL had not included the NASA-directed requirements in all its existing IT operations and maintenance contracts. Untimely incorporation of the Y2K compliance requirements increases the potential for non-compliant Agency systems on January 1, 2000. Management established a June 30, 1999 target date for JPL to incorporate the Y2K requirements in to contracts and agreed to monitored progress. |
| Audits | NAS Data Center General Controls at Ames Research Center Numerical Aero-Space Simulation Facility (IG-99-010) | NASA had not established an adequate control structure to provide for a reliable computing environment at the NAS. Major control weaknesses were identified in the areas of (1) physical and logical access, (2) computer security, (3) file retention, backup and recovery management, (4) software change management (5) system accounting and file auditing, and (6) risk assessments. Management generally concurred with our recommendations and initiated responsive corrective actions. |
| Audits | Disaster Recovery Planning at Johnson Space Center (IG-99-005) | While a disaster recovery plan is in place, the SSPF does not have a strategy or procedures in place for extended backup operations in the event of a disaster, the plan is not tested annually, and SSPF application users have not developed contingency plans. Management concurred with four of the six recommendations and initiated corrective actions. Management decided to accept the risks associated with (1) vendors not supplying backup resources in a timely manner, and (2) not establishing contingency plans for the Flight Equipment Interface Devices. |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Year 2000 Program Oversight of NASA's Production Contractors (IG-99-004) | NASA's Y2K Program lacks reasonable assurance that its production contractors will provide Y2K-compliant data to support key financial and program management activities. As a result, NASA risks using non-compliant data that may adversely affect the Agency's control, budgeting, program management, and cost accounting activities. Management generally concurred with the intent of the recommendations and initiated a plan to assess the Y2K status of NASA's major contractors. |
| Audits | Data Center Controls at Lewis Research Center (IG-98-039) | The physical access control system used to protect LeRC's Research Analysis Center had not been certified as meeting security requirements. Physical access procedures to the facility were not adequate. LeRC is currently addressing these issues. |
| Audits | Disaster Recovery Planning at Goddard Space Flight Center (IG-98-036) | The Solar Heliospheric Observatory Mission Operations Center did not have computer contingency capabilities in place in the event of a disaster. Additionally, contingency plans for a data center associated with the Tropical Rainfall Measurement Mission were incomplete. Finally, computer risk assessments did not analyze the potential effects of losses caused by disasters. GSFC agreed to implement corrective actions. |
| Audits | Information Technology Capital Planning and Investment Control (IG-98-034) | The NASA IT investment process does not satisfy Clinger-Cohen Act and OMB Circular A-130, *Management of Federal Information Resources*, requirements for post-implementation reviews of major, new IT investments. NASA initiated process improvements which should satisfy the IT post-implementation review requirements. |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Improving Controls Needed Over NASA's Super-Computing Inventory (IG-98-021) | NASA's Consolidated Supercomputing Management Office (CoSMO) did not have an accurate inventory of NASA's supercomputers and supercomputing time purchased. NASA initiated responsive corrective actions. |
| Audits | Consolidation Decision for Secure Supercomputers (IG-98-020) | Cost-benefit analysis prepared by NASA's CoSMO did not adequately support its decision to relocate secure supercomputing from the Langley Research Center (LaRC) to the Naval Oceanographic Office at the Stennis Space Center. The report recommended that the CoSMO Director use only current, accurate, complete, and adequately documented data in its consolidation decisions. NASA concurred with the recommendation. |
| Audits | Data Center General Controls at Kennedy Space Center (IG-98-018) | Procedures for monitoring unauthorized access attempts to the Shuttle Processing Data Management System were inadequate. KSC took corrective action. |
| Audits | Data Center General Controls at Jet Propulsion Laboratory (IG-98-009) | Computer security implementation plans and reviews had not been developed or conducted for JPL's Institutional Business Systems (IBS) as required by JPL policy. Additionally, physical access controls to the IBS data center were in need of improvement. JPL corrected these deficiencies. |
| Audits | Data Center General Controls at Goddard Space Flight Center (GSFC) (IG-98-006) | Physical access controls associated with the Hubble Telescope Data Operations Center and the Hubble Telescope Servicing and Maintenance System Facility were inadequate. Additionally, computer risk management plans had not been conducted as required. GSFC corrected these deficiencies. |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Data Center General Controls at Johnson Space Center (JSC) (IG-98-005) | We found that physical access controls to the Shuttle Software Production Facility needed improvement. Additionally, the facility did not have an uninterruptible power supply (UPS) as a defense against power problems. JSC corrected the physical access problem and agreed to conduct a feasibility study and cost/benefit analysis on the UPS. |
| Audits | Application of OMB Circular A-76 to Desktop Outsourcing (IG-98-001) | NASA had not fully satisfied the cost comparison requirements of OMB Circular A-76, *Performance of Commercial Activities*, relative to the Agency's desktop computer outsourcing initiative. NASA took actions that satisfied the prerequisites for exemption from A-76 cost comparison requirements. |
| Audits | Data Center General Controls at Marshall Space Flight Center (IG-97-039) | We found control weaknesses associated with the mainframe data center's physical security, environmental security, technical standards, computer security administration, and software change management. Based on our recommendations, MSFC corrected the weaknesses. |
| Audits | Data Center General Controls at Langley Research Center (IG-97-035) | System access privileges were not being removed in a timely manner. Physical access privileges to the data center were not reviewed and revalidated. Computer security plans were not prepared and system security reviews had not been performed. Based on our recommendations, LaRC corrected these problems. |
| Audits | Physical Security at Ames Research Center Numerical Aerospace Simulation Facility (IG-97-030) | The NAS computing facility did not have adequate backup or contingency procedures to deal with physical access control system failures. ARC corrected the problem. |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Off-Site Use of NASA Computer Resources (IG-97-025) | NASA could improve productivity through increased use of software license agreements permitting NASA employees to install widely used software on their personally owned computers for work-related use. NASA initiated responsive corrective actions. |
| Inspections | Assessment of the National Aeronautics and Space Administration's Automated Systems Incident Response Capability (NASIRC) (G-99-007) (Sensitive—Limited Distribution) | NASIRC is used by NASA to identify and respond to incidents and attacks involving NASA's automated information and telecommunications systems. Our report addressed the adequacy of the Agency's incident reporting, response, handling, coordination, and information-sharing capabilities. NASA management concurred with our 11 recommendations. This report is sensitive with limited distribution; it is not generally releasable to the public. |
| Inspections | NASA's Implementation of a Public Key Infrastructure (PKI) (G-99-006) | With the increasing number of computer intrusions, NASA requires security, authentication, and access controls over electronic communications (e.g., electronic mail, data interchange, Internet data and use, and financial software). The use of a PKI is one important way to achieve strong security by using cryptography. NASA responded to security needs by selecting products from one vendor to meet key requirements. An interdisciplinary team of auditors and IAIA evaluators provided recommendations to NASA concerning the implementation of a PKI. |
| Inspections | Dryden Flight Research Center Network Intrusion - Lessons Learned (G-99-002) | We highlighted prudent steps that Dryden took overcoming an unauthorized network intrusion. We shared this report with NASA computer and security officials to share lessons learned from the Dryden experience. |

(Continued)

**Table 4B - Information Technology Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Inspections | X-33 Program Security Assessment (G-98-009) | The OIG assessed the security framework of the Cooperative Agreement between NASA, the Lockheed-Martin Skunk Works, and several other partners to launch a prototype reusable launch vehicle. We made five recommendations aimed at improving security for ground and flight operations. NASA management concurred in three recommendations and is considering the other two. |
| Inspections | Lewis Security Management Inspection (G-98-007) | NASA management concurred with most recommendations we made to improve physical and information security weaknesses at LeRC Research Center. Management has already implemented many of the recommendations and is actively addressing others. |

## 5. Fiscal Management

**Background** Improving financial management has become a significant issue throughout the Federal Government. The Chief Financial Officer Act of 1990 established the legal framework for improved federal financial management. This Act requires agencies to prepare financial statements and the agency's OIG (or an independent public accounting firm selected by the OIG) to audit these statements.

NASA's financial management environment comprised of decentralized, non-integrated systems was identified by the Agency as a significant area of concern in its FY 1998 FMFIA Report. We recommend that a similar area, fiscal management, be reported as a significant area of concern this year. The Agency has experienced difficulty in implementing the IFMP, a NASA-wide, fully integrated, transaction-driven financial management system intended to provide full-cost accounting and other budget information. In April 1999, we reported that implementation of the new system had slipped from July 1999 to June 2000, costs have increased by $7.1 million, software that the contractor promised would be available at contract award in September 1997, is still not completed, and there is a significant risk that the revised delivery schedule will not be met. The delay in implementing the new system will result in continued reliance on outdated systems that do not provide the financial and management information that the Agency needs. Also, NASA will not be able to implement full cost management as planned.

In addition to the challenges posed by IFMP, the Agency faces other obstacles in implementing full cost management, budgeting, and accounting. The objective of full costing is to establish the true mission costs of programs and activities, thereby enabling NASA managers and other users of financial statement information to make more reliable business decisions in performing critical work with fewer resources.

**Future Challenges** The keys to improved fiscal management include:

- Monitoring contractor performance of financial statement audits to ensure that the statements are properly prepared and thoroughly reviewed.
- Ensuring adequate integration and testing of newly developed automated accounting modules or capability.
- Ensuring that the Agency continues to properly account for and record financial transactions as new capability is implemented.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 5A. Prior work is listed in Table 5B.

**Table 5A – Fiscal Management Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Audit of Relief Granted for Overpayment of General and Administrative Costs (Carryover) A9907200 | Evaluating the propriety of relief granted to a contractor for overpayment of general and administrative costs billed to the Government. |
| Audits | Quality Control Review of the Fiscal Year 1998 Financial Statement Audit of the NASA/Johnson Exchange (Carryover) A9906101 | Examining the use of appropriated funds for the exchange. This is a spin-off of the review done to ensure that the audit of the Exchange's financial statements for the period ending September 30, 1998, were performed in accordance with generally accepted auditing standards. |
| Audits | Quality Control Review of NASA's Fiscal Year 1999 Financial Statement Audit (Carryover) A9906000 | Determining whether Arthur Andersen conducted its audit in accordance with government auditing standards and provisions of OMB Bulletin 98-08. |
| Audits | Quality Control Review Stennis Space Center Exchange (Carryover) A9904700 | Ensuring audit of the Exchange's financial statements for the period ending September 30, 1998, were performed in accordance with generally accepted auditing standards |
| Audits | Quality Control Review of NASA's Fiscal Year 2000 Financial Statement Audit | Determining whether Arthur Andersen conducted its audit in accordance with government auditing standards and provisions of OMB Bulletin 98-08. |
| Audits | Controls Over Processing Obligations | Determining whether year-end obligations are valid and properly represent bona fide needs that existed during the period funds were available. |
| Audits | Performance Incentive Fees | Determining whether NASA is complying with federal requirements relating to provisional and advance payments for incentive fees. |
| Audits | Review of Carrier Account Operation | Evaluating whether carrier accounts are properly used to accumulate commitments, obligations, costs, and disbursements and distribute funds to benefiting programs. |
| Audits | Contract Payments Electronic Funds Transfer and Controls | Evaluating the internal controls associated with electronic fund transfer payments to contractors and to review compliance with existing rules and regulations. |

(Continued)

**Table 5A – Fiscal Management Planned Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Property Management and Controls—Contractor-held Equipment | Evaluating management controls/procedures over accountability and utilization of NASA personal property held by off-site contractors. |
| Audits | A-133 Quality Control Reviews of Audits Performed for Non-Profit Institutions and State and Local Governments. | Ensuring that CPAs' audit work and reports meet the applicable auditing and reporting guidance contained in OMB Circular A-133, generally accepted government auditing standards and generally accepted auditing standards. These audits ensure that the funds NASA awards to these institutions are properly accounted for. |
| Audits | Review of Reimbursable Pricing | Evaluating reimbursable agreements to determine whether reimbursement amounts are accurately computed and appropriately billed and collected. |
| Audits | Management of NASA's T-38 Aircraft Fleet | Determining whether NASA has complied with requirements for managing, using, and accounting for the costs of its aircraft, and has conducted periodic reviews for the continuing need of its aircraft. |
| Audits | IFMP/Security and Internal Controls Working Group | Participating in group to address the security and internal control issues related to the configuration and implementation of the Integrated Financial Management System at all NASA Centers. |
| Inspections | Assessment of NASA Intergovernmental Personnel Act (IPA) Policies and Practices (Carryover, G-99-019) | Determine whether the Agency IPA arrangements with external organizations are effective and compliant with the law and regulation. |

**Table 5B – Fiscal Management Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Matching Disbursements to Obligations (IG-99-059) | NASA financial management personnel did not properly match disbursements to obligations. Therefore, authorized funds may not have been used for their authorized purpose. Three recommendations were made to management: (1) require NASA contractors submit accounting information on their invoices, (2) procurement offices provide payment instructions to NASA financial management activities, and (3) require disbursements be properly matched to obligations. Management does not concur with any of the recommendations. |
| Audits | Implementation of NASA's Integrated Financial Management Project (IG-99-026) | The IFMP contractor did not fulfill its agreement to deliver a fully integrated management system by July 1, 1999. This delay will cause NASA to (1) be less than fully compliant with federal laws and Agency requirements and (2) incur additional contract costs and maintenance costs for legacy systems that would otherwise be avoided through IFMP implementation. We recommended the Agency take steps to protect its interests and receives adequate consideration due to the contractor's nonperformance, and that NASA tests the final software to ensure it meets all federal requirements. Management concurred and has initiated corrective actions. |
| Audits | X-33 Funding Issues (IG-99-001) | NASA established an arrangement with Lockheed-Martin within the X-33 cooperative agreement to delay billing for completed and government-accepted milestones until the following fiscal year. As a result of this practice, NASA had unrecorded year-end obligations, costs, and liabilities totaling $22 million in FY 1996 and $34 million in FY 1997. This resulted in Agency reports and the financial statements not being accurate. Management agreed to study the appropriateness of existing funding and payment practices and to take corrective actions deemed appropriate. |

(Continued)

**Table 5B – Fiscal Management Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | NASA's IFMP Time and Attendance/Labor Distribution Module (IG-98-004) | NASA concurred with our recommendation to develop a policy and assess the risks associated with the planned deployment of the IFMP Time and Attendance module through the World Wide Web. NASA also began to develop necessary management controls for several high-risk areas that we identified in the planned module (modifying and certifying data, prior period adjustments, and access to personnel and payroll data). |
| Audits | Observations Regarding the IFMP Time and Attendance Module (Management Letter M-IG-97-011) | NASA evaluated similar time and attendance systems in use at several federal agencies and private companies to identify best practices that could be applied at NASA. Also, NASA started a security risk analysis to assess the need for electronic signatures in the planned time and attendance system. |
| Audits | Early Phases of NASA's Integrated Financial Management Project (IFMP) (IG-97-001) | NASA did not perform adequate risk analysis as part of the requirements definition, did not adequately evaluate alternatives for meeting its requirements, and did not prepare a realistic cost estimate and implementation schedule. Management eventually performed risk analyses, and continues to do so to ensure that necessary security and management controls are included as part of the contract's requirements. Management revised its cost estimates and delivery schedule as it identified additional risk areas. |
| Audits | Participation in the Security and Internal Control Working Group | The group provides a forum to resolve issues regarding the development and implementation of NASA's planned integrated financial management system. The group is working with the Independent Verification and Validation agent on strategies to evaluate internal controls associated with an implemented system. |

## 6. Program and Project Management

**Background** Successful management of programs and projects has always been essential for NASA to meets its mission. This has become even more essential as the Agency has placed a major emphasis on executing projects "faster, better, cheaper." NASA is now applying a disciplined approach to program and project management for technology development programs to enable future Agency missions. The government reinvention initiative also encourages streamlined ways of doing business and measuring success that NASA should incorporate into its program management.

The Agency faces two significant challenges in this area. First, on April 3, 1998, NASA issued NPG 7120.5A, *NASA Program and Project Management Processes and Requirements*. This guidance was issued to improve program and project management by (1) including all parties involved from the beginning of the program or project, from solicitation to delivery of the end item, and (2) placing more responsibility/risk in the hands of the contractor which, in turn, will reduce the amount of Agency oversight. Second, the majority of current NASA contracts are being administered under the previous NASA Management Instruction guidance that the new NPG replaced. As the Agency transitions to full implementation of the NPG, considerable risk exists, that a noncompliance could occur that may have a material impact on the success of NASA programs. In addition, downsizing the Agency's acquisition workforce and increased reliance on contractor support present new challenges that NASA must monitor until full implementation of the NPG occurs.

The Agency also developed the NASA Strategic Plan, which established a framework of four Strategic Enterprises to implement missions. The Strategic Enterprises are: (1) Earth Science, (2) Space Science, (3) Human Exploration and Development of Space, and (4) Aero-Space Technology.

**Future Challenges** Keys to effectively managing NASA programs and include:

- Improving planning to enable the Agency to accomplish its missions in the face of declining budgets and staff.
- Eliminating duplication in programs and improving coordination with other research and development organizations.
- Ensuring that programs and projects accurately assess their progress and successfully achieve their goals.
- Effectively using technology developments to increase Agency productivity.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 6A. Prior work is listed in Table 6B.

**Table 6A – Program and Project Management Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Space Flight Operations Contract (SFOC) Phase II (Carryover) A9906400 | Determining whether the contract is effectively managing the consolidation of the previous Space Shuttle contracts at JSC and MSFC. |
| Audits | The Deep Space Network (DSN) Support Services | Determining the need for the DSN Logistic Depot in Barstow, California, and whether more cost-effective alternatives have been considered by JSC. |
| Audits | Space Infrared Telescope Facility (SIRTIF) Schedule and Budget Controls | Determining whether the SIRTIF project is effectively controlling and managing project scope, schedule, and budget and whether the project is comparing cost and schedule results against valid planning data. |
| Audits | Mars Exploration Program, Program Planning | Determining whether the Mars Exploration Program Office adequately planned and budgeted to meet its strategic goals. |
| Audits | Verifying and Validating Performance Data Under the Government Perform-ance and Results Act | Identifying the data sources for selected performance goals and measures and assessing the accuracy of the comparison of planned vs. actual performance. |
| | Audit of Space Shuttle Payloads | Evaluating the effectiveness of NASA policies, procedures, and practices relative to Space Shuttle use for payload assignments. |
| Audits | Free Flight Program | Determining whether NASA's work on innovative air traffic management duplicates existing or completed research is adequately coordinated with airline industry partners and whether research funds are being effectively used. |
| Inspections | Assignment of Astronauts to Long-Duration Space Missions | Determining whether NASA has developed an appropriate process for selecting astronaut crews for long-duration space missions. |
| Inspections | Astrobiology Program | Determining whether (1) NASA's Astrobiology program is properly organized and funded; and (2) the Astrobiology Institute and the Strategic Enterprises are working effectively together to achieve the Agency's goals. |
| Inspections | Software Engineering Assessment of the International Space Station | Determining whether ISS program management is using proper software engineering practices in the development and management of ISS flight software and software tools. |

**Table 6B – Program and Project Management Prior Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Earned Value Management at NASA (IG-99-058) | The authority to implement EVM policy should be aligned with the responsibility for program and project management rather than with the fiscal chain of command and fiscal policy directives. We recommended that NASA issue EVM policy as program and project management directives and establish procedures for reporting comprehensive EVM information to upper management. Management did not provide comments on the draft report and has been requested to provide complete comments on the final report. |
| Audits | NASA Implementation of the Government Performance and Results Act (IG-99-055) | NASA has made substantial progress in implementing the Act, including preparing and updating its Strategic Plan and issuing Performance Plans for FY 1999 and FY 2000. However, Senior management has not (1) provided adequate oversight of overall progress on the established FY 1999 performance targets and (2) established appropriate procedures to ensure the data would be used and were accurate and reliable. Management agreed to correct the deficiencies. |
| Audits | JPL Management of Subcontractor Technical Performance (IG-99-054) | JPL's most significant subcontracts were not subjected to adequate surveillance. Sub-contractor data disclosed problems in the designing, building, and safeguarding of hardware and employee non-compliance with quality system procedures. JPL did not act on these problems in a timely manner, in part, due to the lack of surveillance activity. We recommended that NASA direct the JPL Director to revise current project management policies to require project manage-ment assessment and monitoring of sub-contractor procedures to ensure that they are designed and functioning to prevent, detect, and correct technical problems. Management partially concurred and we requested further information regarding the specific corrective actions. |

(Continued)

**Table 6B – Program and Project Management Prior Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Performance Evaluation Plan for the Earth Observing System (EOS) Data and Information System Core System (ECS) Contract (IG-99-038) | The ECS contractor's performance was not linked to the contract's Performance Evaluation Plan. The award fee plan relied on subjective evaluations by government personnel as the basis for award fee determinations. The plan did not contain objective measures of performance and, therefore, did not sufficiently link performance objectives to the award fee. Management agreed to revise the Performance Evaluation Plan to link award fee payments to specific cost, schedule, and performance objectives in the restructured ECS contract. |
| Audits | Earned Value Management at NASA—ECS Performance Measurement Baseline (IG-99-037) | NASA can improve the use of EVM on the ECS contract by performing an integrated baseline review to substantiate the validity of the contractor's performance measurement baseline. Without a valid baseline, variances may not be detected and addressed with corrective action plans. Management agreed to review and appropriately revise its Program and Project Management guidance and to perform a baseline review for the restructured ECS contract. |
| Audits | Audit of X-33 Cooperative Agreement (IG-99-019) | NASA has had limited success using a cooperative agreement on the X-33 Program. However, using a cooperative agreement contributed to program management problems such as (1) program plans, internal agreements, and guidance documents either were not prepared or were not timely; (2) industry partners did not provide required analyses of their cost estimates or submit monthly reports on resource contributions; (3) Center practices for controlling and reporting costs require improvement; and (4) ownership of the X-33 flight vehicle upon program completion has not been determined. Management generally concurred and initiated corrective action. |

(Continued)

**Table 6B – Program and Project Management Prior Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Advanced X-ray Astrophysics Facility (IG-99-016) | Launch of the Chandra X-ray Observatory was delayed because of problems in software development and inadequate time scheduled for integration and test activities for the observatory's flight and ground software. Although software development was identified as a high risk, the observatory's Risk Management Plan was not updated because it was not required by NASA policy. We recommended that management revise the NASA policy to require program managers to update Risk Management Plans as high-risk issues arise. Management concurred and planned to address the issue through the Program/Project Management Working Group. |
| Audits | EOS Common Spacecraft Planning and Management (IG-99-011) | Program management for the EOS spacecraft designated as PM-1 and CHEM-1 can be improved in the areas of quality control and communication of award fee determinations. The DCMC did not submit an approved Quality Assurance Plan and periodic status reports to the NASA Flight Assurance Manager. In addition, NASA event coordinators made significant changes in the contractor's award fee scores without discussing the changes with the event monitors. Management concurred and initiated responsive corrective actions. |
| Audits | Earth Science Commercial Data Buy Program (IG-98-025) | One of ten contracts awarded for Phase I of this program duplicated an existing NASA capability to access the same data through current Agency agreements. Cost projections show that NASA could unnecessarily spend an additional $576,000 during Phase II. We recommended that NASA not award a Phase II contract. Management concurred and NASA will not pursue a Phase II contract. |

(Continued)

**Table 6B – Program and Project Management Prior Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | NASA's Plans to Successfully Achieve the Earth Observing System Scientific Objectives (IG-98-010) | Our audit disclosed that budget cuts would affect NASA's ability to achieve its original EOS Program goals. The Agency partially concurred with our recommendation to reevaluate the EOS goals when it addresses the Earth Science Enterprise's overall science requirements. |
| Audits | Earth Observing System Data and Information System (EOSDIS) Federation Plan (IG-98-002) | NASA did not perform a cost benefit analysis prior to initiating the pilot program to broaden participation in the distribution of EOSDIS information products through a federation of partners. The Agency concurred with our recommendation to conduct the analysis before making a decision regarding moving to a federated plan. |
| Inspections | Assessment of the Triana Mission (G-99-013) | The Triana mission is a relatively new NASA project to build, launch, and operate a spacecraft that will take pictures of the sunlit side of the Earth and transmit them to the Internet 24 hours a day. Total cost for Triana increased considerably as the focus changed from education to science. Based upon a circumscribed peer review process, we reported that the added scientific capabilities may not be the best expenditure of NASA's limited science funding. We also reported that the Triana spacecraft, originally conceived as a cooperative effort among university students, industry, and government, is essentially being built, launched, and operated by NASA. In addition, NASA's major role in developing and launching the spacecraft did not appear to further the goals of the National Space Policy of 1996 and the Commercial Space Act of 1998, which directs NASA to acquire spacecraft and launch vehicles from the private sector whenever possible. We recommended that NASA reassess and modify its approach to the Triana mission. NASA management did not concur with our recommendation. |

(Continued)

**Table 6B – Program and Project Management Prior Work** (continuation)

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Partnerships | Review of the NASA/ Commerce Agreement and Management of the Polar-Orbiting Operational Environmental Satellite Program (P&A-97-002) | Represents a successful partnership between Department of Commerce and NASA that benefits from close coordination at the working level and long-range acquisition planning. We identified $26.9 million of over-estimating the program budget; potential savings of $43 million by obtaining a launch service commitment; and approximately $34,000 of available award fees were inappropriately added to the award rollover pool. Management has taken responsive actions to most of our recommendations. |

## 7. Launch Vehicles

**Background** NASA uses two types of launch vehicles, the Expendable Launch Vehicle (ELV) and the Reusable Launch Vehicle (RLV). The ELV's do not carry people, and each vehicle can be used only once. ELV's are used to carry satellites and exploratory mission components into space, such as the Cassini and Mars Surveyor. NASA uses commercial sector suppliers for ELV's. The Commercial Space Act generally requires the Federal Government to acquire space transportation services from U.S. commercial providers. Since NASA acquires launch services commercially, the Agency does not maintain the same level of control as compared to in-house operations. Estimating costs and committing to scheduled launches are major challenges in this environment.

In contrast to ELV's, the RLV provides access to space using the same vehicle multiple times. The Space Shuttle is NASA's current operating RLV. However, the Space Shuttle fleet is aging and is expensive to operate. In FY 1999, the Space Shuttle budget was nearly $3 billion, approximately 22 percent of the total NASA budget. Each of the Shuttle orbiters is taken out of service about once every 3 years for planned major modifications and repairs. However, because of the age of the fleet, unscheduled repairs are often necessary. The President's National Space Policy directed that NASA work with the private sector to develop flight demonstrators that will support a decision by the end of the decade on development of a next-generation reusable launch system. The Agency has signed cooperative agreements with four industry partners for the design and development of technology demonstrators leading to the next generation RLV. The goal of the RLV program is to substantially reduce the cost of sending cargo to low-Earth orbit.

**Future Challenges** Keys to the development and use of launch vehicles include:

- Assuring the availability of small ELV's to ensure schedule milestones and cost effectiveness of NASA missions.
- Evaluating whether NASA's providing the majority of developmental funds and assigning technology rights to its industry partners in the development of the new RLV's is in the best interest of the Government.
- Establishing and monitoring surveillance plans for all major functions of the Space Shuttle operations contract.
- Ensuring that plans are in place and are effectively implemented to address Shuttle systems obsolescence, logistics support, technical/safety upgrades, and funding.
- Closely monitoring Space Station hardware delivery plans and initiate prompt corrective actions to preclude slips in the launch schedule.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 7A. Prior work is listed in Table 7B.

**Table 7A – Launch Vehicles Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Audit of Small Expendable Launch Vehicle Services (SELVS) (Carryover) A9904400 | Determining whether the SELVS-KSC contract was properly planned and managed. |
| Audits | Small Usable Booster (X-34) Development Program (Carryover) A-HA-98-050 | Assessing program management effectiveness and conformance with NASA program management guidance in NPG 7120.5A. |
| Audits | Management of Expendable Launch Vehicle Services | Determining the impact of recent legislation and launch vehicle failures on NASA's successful launch rate. |
| Audits | Integration and Coordination of Reusable Launch Vehicle Technology Initiatives | Determining whether NASA has adequately integrated and coordinated RLV initiatives to ensure these activities are carried out efficiently and effectively without duplication of effort. |
| Audits | Hypersonic Technology Program | Determining whether the Hyper-X program goals are reasonable and achievable, funding is appropriate, and cost and schedule are realistic and properly managed. |
| Audits | Advanced Space Transportation Programs | Determining whether the strategies and procedures for planning and executing Advanced Space Transportation Program technology investments and assigning priorities are adequate. |

**Table 7B – Launch Vehicle Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Single Source Suppliers of Critical Items (IG-98-030) | The Space Shuttle Program Office has not developed adequate analyses for critical, single-source production and logistics suppliers. Management is taking corrective action. |
| Audits | Follow-up on Audit of Orbiter Maintenance Down Periods OMDP) (IG-98-016) | NASA could save $7.6 million per OMDP by performing maintenance at KSC, but would incur significant risk. The Agency agreed to reevaluate where OMDP's are performed after the ISS is complete and a less aggressive Shuttle Manifest exists. |
| Audits | Privatization of NASA Sounding Rocket Program (IG-97-020) | OIG review of Agency plan to reduce infrastructure costs by privatizing the Sounding Rocket Program at the Wallops facility was not supported by a cost comparison or program impact analyses. The Agency agreed with the finding and intends to implement both the comparison and analyses before making a final decision. |
| Audits | Reusable Launch Vehicle Program (IG-97-019) | NASA must continue its efforts to obtain Congressional approval of a waiver indemnification for its private sector RLV partners. The Agency took appropriate steps to rectify this condition. |
| Audits | Reusable Launch Vehicle Survey of X-33 Task Agreements (IG-97-018) | The OIG review found that the X-33 partner needs to develop and implement systems for monitoring and tracking cost, schedule, and technical performance. The Agency concurred and began corrective action. |

## 8. Research and Technology Demonstration/Application

**Background** Since its inception in 1958, the Agency has been charged with ensuring that NASA-developed technology is effectively transferred to the U.S. industrial community to improve its competitive position in world markets. One of NASA's primary functions is to conduct research that reduces risk so that the industrial community can successfully commercialize new technology. The commercial technology process involves multiple stages. In the initial stages, NASA identifies promising new technologies. Through Agency projects, researchers conduct demonstrations to validate the new technology and establish its readiness for further application and commercial potential. In the next stages of the commercialization process, NASA works with industry, sometimes through partnerships, to further develop the technology and reduce risk. After risk is sufficiently reduced, industry is responsible for the remaining steps of the commercialization process.

Each NASA Enterprise is responsible for technology demonstration. The Commercial Technology Division, Office of Aero-Space Technology, has Agencywide responsibility for commercialization. This organizational change has impacted technology demonstration and development. Within each Enterprise, technology demonstration projects must compete with other projects for scarce resources. Future pending budget reductions may also restrict NASA's ability to perform technology development and commercialization activities.

**Future Challenges** Keys to effective technology demonstration and transfer include:

- Achieving a balance between scientific research and technology development and demonstration projects.
- Continuing to refine the technology transfer process to ensure that U.S. industry achieves the maximum benefit from the new technologies identified.
- Dealing with the budget cuts and funding limits that restrict NASA's ability to perform technology development and commercialization activities.
- Forming innovative partnership arrangements with U.S. industry to share both the risk and costs of technology demonstration and commercialization.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 8A. Prior work is listed in Table 8B.

## Table 8A – Research and Technology Demonstration/Application Planned Work

| *Program Area* | *Assignment* | *Focus* |
|---|---|---|
| Audits | Engineering Research and Technology Development on the International Space Station | Determining whether NASA has implemented the National Research Council recommendations for using the ISS for engineering research and technology development activities. |
| Audits | Effectiveness of the New Millennium Program | Determining whether the New Millennium Program is effectively managed to achieve the desired results of validating new technologies for flight programs while gathering scientific. |
| Audits | Strategic Enterprise Technology Programs | Determining whether the technology program of individual Strategic Enterprises is properly aligned with the goals and objectives of NASA's Strategic Plan and the NASA Technology Plan. |
| Audits | Commercialization of Space Station and Space Shuttle | Determining whether NASA complied with the Commercial Space Act of 1998 and developed and effective mission model for the total potential space missions to be conducted in the United States. |

**Table 8B – Research and Technology Demonstration/Application**
**Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | X-33 Cost Estimating Process (IG-99-052) | NASA is using a cooperative agreement for the X-33 Program, a first for a major technology program ($1.1 billion). Under the terms of the cooperative agreement, NASA will provide about 80 percent of the funds and Lockheed Martin Skunkworks will invest at least 20 percent to demonstrate the X-33. However, NASA did not adequately address cost reasonableness and cost risk for the X-33 Program. Cost overruns put NASA's investment in the X-33 Program at risk. Since this is a cooperative agreement, the recipient may end its part of the partnership should cost overruns become too burdensome or request that NASA invest more money. NASA agreed to improve its evaluation processes for cost reasonableness and cost risk and to update the X-33 Program's estimate to complete to reflect cost uncertainties. |
| Audits | Advanced Air Transport-ation Technologies (AATT) Project(IG-99-030) | The AATT project has developed and FAA has deployed three decision support tools: Traffic Management Advisor, Surface Movement Advisor, and Passive Final Approach Spacing Tool. Because the technology is so complicated, the transfer of these tools cannot be accomplished successfully without NASA's assistance. Therefore, we emphasized the importance of NASA assisting the FAA to ensure the decision support tools are successfully deployed. To ease the transition, NASA is developing a technology transfer plan that will provide for coordination with the FAA. |

(Continued)

**Table 8B – Research and Technology Demonstration/Application**
**Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Audit of Commercial Remote Sensing Program Office(CSPRO) (IG-99-023) | The NASA CRSPO has not leveraged the commercial remote sensing industry to provide products that meet baseline scientific requirements. Therefore, NASA has not been able to reduce the costs of remote sensing science and technology programs through competition within the commercial remote sensing industry. We recommended that NASA (1) publish a baseline of scientific requirements to foster competition within the commercial remote sensing industry, and (2) use this baseline in initiatives to fulfill NASA's Earth Science objectives at the lowest cost. The Earth Science Enterprise will publish a Science Implementation Plan that identifies baseline scientific requirements and the CRSPO will continue to facilitate communication between industry and the scientific community. However NASA believes it is industry's choice to provide data and services to the scientific community. |
| Audits | Management Controls in Earth Systems Sciences Building Contract (IG 98-015) | We found that NASA misused $385,000 of research and development funds for construction (construction of facilities funds should have been used). NASA corrected the mistake. |
| Audits | Dissemination of Earth Science Program Data and Information (IG-98-013) | EOS information was not reaching four of the five intended user groups: (1) Education, (2) Public Sector, (3) Technology, and (4) Commercial. NASA began corrective actions to ensure these four groups as well as the Scientific Users have access. |

## 9. International Agreements

**Background** One of the goals of the National Space Policy is to promote international cooperative activities that are in the national interest. The National Aeronautics and Space Act of 1958 gives NASA statutory authority to enter into binding agreements with foreign entities. Since its inception, NASA has entered into approximately 3,500 international agreements. These agreements span every NASA Enterprise and involve numerous programs and projects with the most notable being the ISS Program. NASA's international agreements also often provide for foreign nationals and representatives to have access to NASA facilities and information. NASA's Office of External Relations is responsible for determining the appropriateness and level of access. Inherent in a decision to grant foreign personnel access is the risk of sabotage or disclosure of information of military or economic importance.

NASA's management of export-controlled technologies is also an area of concern. NASA needs an export control identification and classification process to control all the Agency's export-controlled technologies so that NASA employees are aware of the technologies they need to protect. The Federal Bureau of Investigations notified NASA that Agency programs are a high priority target for foreign intelligence services. Past and current work revealed a need for NASA to strengthen its internal controls sufficiently to detect both internal theft and inadvertent loss of NASA technology and research.

**Future Challenges** Key considerations with the use of international agreements are:

- Program and project vulnerability to schedule delays and cost overruns that require diplomatic rather than contractual solutions.
- Security controls on technology that impacts national security.
- Controls to assure the quality and timeliness of the goods and services provided.
- Mechanisms to assure a balance between program needs and national considerations.
- Plans with specific critical paths and planned alternative courses of action to maintain program/project continuity.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 9A. Prior work is listed in Table 9B.

**Table 9A – International Agreements Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Contractor Control of Sensitive Technologies (Carryover) A9903300 | Evaluating the controls over contractors that export technology for NASA missions to ensure that transfers of commodities, software, or technology to foreign partners comply with export control laws and regulations. |
| Audits | Deemed Export of NASA Information and Technology | Determining whether NASA has appropriate policies and procedures in place to ensure that technology and information is not inadvertently exported to foreign nationals. Any release to a foreign national of technology or software that is subject to the Export Administration Regulations is "deemed to be an export" to the home country of that foreign national and is commonly referred to as "deemed exports." |
| Audits | Safety Process for International Space Station Partners | Determining whether components of the Space Station provided by foreign partners meet NASA safety requirements and NASA has conducted required safety reviews of the international partners. |
| Inspections | Information Technology and Export Controls at NASA Institutes | Determining whether NASA has implemented appropriate IT Security procedures at NASA research institutes, including export control issues. |

**Table 9B – International Agreements Prior Work**

| *Program Area* | *Reports* | *Results* |
|---|---|---|
| Audits | NASA Team to Review Payments to the Russian Government | The OIG had a representative on the NASA team that traveled to Russia to review payments made by the Agency to the Russian Government. The OIG will continue to assess this situation to identify any potential vulnerability to NASA. |
| Audits | Audit of NASA Control of Export-Controlled Technologies (IG-99-020) | NASA has not identified all sensitive technologies related to its major programs and does not maintain an inventory process for sensitive technologies. In addition, training of personnel in the Export Control Program needs improvement. We recommended that management ensure that all sensitive technologies are identified and protected, only qualified personnel perform export control audits, and NASA employees are trained in properly classifying and protecting sensitive technologies. Management concurs with the recommendations and has begun corrective actions. |
| Audits | Audit of NASA's Moscow Liaison Office (IG-97-033) | NASA agreed to implement better management controls of its Moscow Liaison Office that supports NASA personnel on temporary duty travel to Russia. Some of the efforts included strengthening controls over travel to Russia and acquisition of support resources such as housing, vehicles, and equipment. |
| Audits | Russian Involvement in the International Space Station Program (IG-96-007) | The OIG reinforced GAO and Congressional concerns regarding Russia as a partner in the ISS because of cost schedule impacts affecting all ISS partners. The Agency continued assessing various options while coordinating with partners. |
| Inspections | Assessment of NASA's Financial Assistance to Foreign Visitors (G-98-006) | In evaluating support of cosmonauts flying on U.S. missions pursuant to agreements between NASA and the Russian Space Agency, we recommended, among other matters, that NASA factor payments by the foreign governments when calculating compensation by NASA (management disagreed). NASA did agree that the foreign visitor bank accounts should not be held jointly with civil servants. |

## 10. Environmental Issues

**Background** Years of operations and research activities have left NASA with major environmental cleanup issues. NASA has recognized the existence of several significant environmental issues in its annual FMFIA Report, including identifying responsible parties and negotiating cleanup cost sharing agreements, and financing the closure of Plum Brook nuclear reactors.

Management has been slow in complying with NASA policies established for identifying principle responsible parties and negotiating cost sharing and cost recovery agreements. In reports issued in FY's 1997 and 1998, we recommended that NASA negotiate cost sharing and cost recovery agreements for JPL and the SSFL. While negotiations have begun for JPL, they have progressed slowly. Negotiations have not begun for SSFL. To minimize its cleanup costs, NASA should pursue identifying principle responsible parties and negotiating cost sharing and/or cost recovery agreements. NASA is paying millions of dollars to clean up its facilities that were often contaminated by other government agencies and/or contractors. These agencies and contractors should be responsible for their fair share of the cleanup costs.

Last year, NASA reported equitable environmental cost sharing as a significant area of concern. We continue to believe that environmental cost sharing issues remain a significant area of concern under Environmental Management.

**Future Challenges** Keys to effective management of environmental issues include:

- Prioritizing and addressing environmental obligations.
- Developing consistent procedures under an Agencywide policy.
- Negotiating cost-sharing agreements for environmental cleanup with previous Government and private sector tenants that are also responsible parties.

The following tables address this FY 2000 challenge. Planned projects are listed in Table 10A. Prior work is listed in Table10B.

**Table 10A – Environmental Management Planned Work**

| ***Program Area*** | ***Assignment*** | ***Focus*** |
|---|---|---|
| Audits | Cost Sharing for Environmental Cleanup Efforts (Carryover) A9902800 | Determining whether NASA is adequately identifying potentially responsible parties and developing cost-sharing or cost-recovery arrangements with them. |
| Audits | National Environmental Policy Act (NEPA) Compliance (Carryover) A9902100 | Evaluating NASA's compliance with NEPA provisions which require agencies to factor environmental considerations into the planning of any Agency action. |
| Audits | Hazardous Waste Management | Determining whether NASA and its contractors manage hazardous wastes so that the risk for environmental harm and resulting liability is reduced while conserving natural resources. |
| Audits | Sale of Hazardous Material to the Public | Determining whether NASA has implemented controls over the sale of hazardous materials to the public that protect NASA's interests. |
| Audits | Consolidation of Recycling and Waste Collection Efforts at Co-located Facilities | Determining whether savings can be generated by consolidating recycling and waste prevention programs and contracts at co-located facilities. |
| Audits | Cost Sharing for Environmental Cleanup Activities | Determining whether NASA has implemented its policy for cost sharing on environmental cleanups and has adequately justified its decisions to pursue or not to pursue other responsible parties. |
| Audits | Resource Conservation and Recovery Act (RCRA) Cleanup Costs | Assessing whether NASA is effectively managing RCRA sites to ensure that cleanup efforts comply with environmental directives orders, and other agreements and costs are contained. |
| Audits | ISO 14000 Implementation | Determining whether NASA's current environmental management systems meets the Agency's needs and if ISO 14000 certification will serve NASA's interests. |
| Investigations | Environmental Issues (Proactive Investigations) | Identifying selected contractors and facilities associated with NASA that are not in compliance with environmental laws and regulations. |

**Table 10B – Environmental Management Prior Work**

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Environmental Aspects of the External Tank Contract NAS8-36200 | The production of the external tank for the Space Shuttle still presents potential for environmental impact. The current external tank contract has not been modified to incorporate the federal waste reduction program as set forth under FAR part 52.223-10. Consequently, adverse environmental impact may not be minimized and potential recycling benefits cannot be realized. We recommended that management (1) modify the current external tank contract, if economically feasible, to include a requirement for the contractor to establish a waste reduction program that complies with the FAR requirements, and (2) ensure that the requirement for a waste reduction program is included in the SFOC. Management concurred with the intent of both recommendations. However, we do not believe that management's proposed corrective actions will ensure that a waste reduction program is included in the SFOC contract and have asked management to reconsider their position. |
| Audits | Cost Sharing for Santa Susana Field Laboratory Cleanup Activities (IG-98-024) | Rocketdyne contaminated portions of the SSFL during the performance of past Air Force contracts. NASA has not negotiated cost sharing agreements with responsible parties, and may have overpaid $16.4 million in remediation costs. Rocketdyne may also have overcharged NASA $4.7 million in preventative costs through potential CAS non-compliant allocation practices. NASA could continue to overpay $13.7 million annually. NASA has initiated corrective actions. |

(Continued)

**Table 10B – Environmental Management Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Kennedy Space Center's Recycling Efforts (IG-98-017) | In evaluating KSC's efforts to maximize recycling, we found that the Center's annual progress reports for recycling goals and objectives contained inaccurate and inconsistent data, preventing reasonable measurements of program accomplishments. In addition, KSC lacked procedures to retain proceeds from its recycling program, which could be used to promote the Center's recycling goals and objectives. KSC concurred with our recommendations and implemented corrective actions. |
| Audits | Lewis Research Center's Hazardous Waste Manifest Process (IG-98-014) | We found internal control weaknesses in LeRC's hazardous waste manifest process that could prevent the Center from ensuring full regulatory compliance and minimizing its liability when disposing of hazardous waste. The manifest is the key document used to track the waste throughout the disposal process. Center management concurred with our recommendations to strengthen its controls. |
| Audits | Efforts to Eliminate Ozone Depleting Chemicals (ODC's) from Space Shuttle Operations (February 25, 1998) | NASA's Shuttle Program has proactively reduced its use of ODC's by 90 percent by finding replacement substances and processes. Although the Agency has taken positive steps to reduce ODC's, we identified seven areas in which the Agency could improve its control over ODC's. NASA has taken or proposed actions that are responsive to our suggestions. |

(Continued)

**Table 10B – Environmental Management Prior Work** (continuation)

| ***Program Area*** | ***Reports*** | ***Results*** |
|---|---|---|
| Audits | Status of Plum Brook Station Nuclear Reactors – LeRC (IG-97-038) | NASA had chosen to maintain the Plum Brook reactors in a safe-storage condition instead of decommissioning them, as recommended by expert studies. We found that NASA could save about $5.5 billion if it were to begin decommissioning now rather than in 2017, based on the avoidance of annual maintenance costs and escalating costs of radioactive waste disposal. NASA concurred with our recommendations and is identifying its best option for decommissioning. Management has been meeting regularly with the Nuclear Regulatory Commission to develop strategies. |
| Audits | Cost Sharing for Cleanup Activities at the Jet Propulsion Laboratory (IG-97-024) | Caltech, NASA's prime contractor at JPL, contaminated surrounding ground-water sources during the performance of past Army contracts. NASA had not negotiated cost sharing agreements and would have paid $114 million to cleanup JPL, the majority of which is attributable to other parties. NASA is currently negotiating cost sharing agreements. |
| Investigations | Partnerships With State, Local and Federal Law Enforcement Agencies Targeting Environmental Crimes | As a result of a joint investigation by NASA OIG and other federal and state law enforcement agencies, a contractor pled guilty to a criminal information for improperly storing and disposing of hazardous waste. The company paid $6.5 million in fines. The OIG and other agencies are pursuing civil claims. |